International VDI Conference

Automotive Data Communication

Accelerating Time-to-Market through Communication

June 04 and 05, 2024, Heidelberg

- In-Vehicle Communication Standards
- In-Vehicle Network Architecture
- Simulation and Testing of Automotive Communication Concepts
- Data over Power
- Securing Automotive Communication

+ Panel Discussion

Meet international Experts from:

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The Association of German Engineers (VDI) is one of the largest technical-scientific associations in Europe. Throughout the years, the VDI has successfully expanded its activities nationally and internationally to foster and impart knowledge about technology-related issues. As a financially independent, politically unaffiliated and non-profit organization the VDI is recognized as the key representative of engineers both within the profession and in public.

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Prof. Dr. Andreas Grzemba, Vice President Research and Knowledge Transfer, Deggendorf Insitute of Technology

Dr. Matthias Korte, Director Head of Ideation, Strategy & IP | Advanced Development, LEONI Bordnetz-Systeme GmbH

Mario Maul, Expert Architecture & Networks Vehicle Engineering Electronics, EDAG Engineering GmbH

Marcelino Varas, Manager Product Management, Vector Informatik GmbH

Reasons to attend

Meet the relevant experts in automotive data communication

Learn about the different technical approaches within the industry

Network with technical experts & decision makers from OEMs and major suppliers

Prepare for two days full of insights, contacts & discussions

Discuss current developments in one of Automotive's most important field

Upcoming Events

International VDI Conference
Cyber Security for Vehicles
June 11–12, 2024 in Munich

Conference by VDI Wissensforum GmbH | www.vdi-international.com/01KO137024 | Phone +49 211 6214-201 | Fax +49 211 6214-154

Automotive Data Communication

09:00   Registration & welcome coffee

10:00   Chair's welcome and opening address
Conference chair: Prof. Dr. Andreas Grzemba, Deggendorf Inst. of Technology

I. Architecture & Data Handling

10:15   Virtualizing Ethernet in Automotive Integration Platforms
- SDV architectures shift focus to software-centric vehicle design
- Need for Agile/DevOps and collaboration among cross-functional teams
- Virtualization plays a key role in supporting the SDV trend, ensuring high performance and safety
- Proper hardware, like Stellar integration MCUs, enables effective separation and virtualization

Carsten Demuth, Automotive EMEA Marketing and Application, Director Digital Products and System Marketing, STMicroelectronics, Germany

10:45   Service-oriented Vehicle APIs as enabler for software-driven development
- Service-oriented SOME/IP Interfaces over Ethernet as standardized communication
- Abstraction of architecture variations by the introduction of a functional service provider
- Generic access coordination with simultaneous client method calls
- Improvement in development speed without loss of software quality
- Positive effects on HPC platforms as enablers for fast paced development

Philipp Enke, E/E Architecture, Mercedes-Benz AG, Germany

11:15   ☕ Networking & coffee break

11:45   Design of Network Topology: architecture work vs. serial development
- Preconditions and limitations of the two big phases in E/E development
- Concrete example: decisions for a bus technology
- Highlight of possible solutions for each phase based on the concrete example
- Possible tool support for both phases based on E/E model-based development tool PREEvision

Alexander Mayr, Process Tools, Senior Product Management Engineer, Vector Informatik GmbH, Germany

12:15   Application of Data over Power (DoP) for Sustainable Electrical Vehicle Architecture simplification
- DoP Benefits for EVA
- Challenges in DoP Implementation
- Future Focus and Recommendations

Ashutosh Tomar, Future Architecture innovation Product Owner & Sohan Varghese, Networks SME, both: Jaguar Land Rover Ltd., United Kingdom

12:45   🍽 Lunch

14:15   How In-Vehicle Communication Standards accelerate Time-to-Market and Innovations
- A brief introduction to innovation and the rational for standardization
- E/E zonal architectures and semiconductor supply chain impact on the in-vehicle networking (IVN) technologies. What has changed?
- How BMW's IVN department manage time-to-market and the best customer experience

Keynote

Patrice Ancel, Head of in-vehicle networking technologies, BMW Group, Germany

14:45   Panel Discussion: How can automotive communication technologies support a faster time-to-market?

15:45   ☕ Networking & coffee break

16:30   Future in-vehicle-network architecture for the SDV
- How TSN supports the zonalization, centralization and SWaP-C of IVN
- End-to-End Configuration and guarantees of future in-vehicle-networks
- Safety and Security Aspects
- Missing elements towards a SDV eco system

Alexander Damisch, VP Dependable Networks, TTTech Computertechnik AG, Austria

II. Communication technologies & Connectivity 1

17:00   Next generation CAN: CAN XL and CAN FD Light for future proof E/E Architectures
- CAN XL is cost effective as it enables 3 types of traffic
- CAN XL offers a bit rate of up to 20 Mbit/s, a payload of up to 2048 byte, and new protocol features like Virtual CAN Channel IDs (VCID)
- CAN FD Light offers a bit rate of up to 8 Mbit/s and up to 64 byte data payload
- CAN XL and CAN FD Light are compatible with CAN FD

Gregor Sunderdiek, Product Manager / Robert Bosch GmbH, Mobility Electronics, Germany

17:30   From FlexRay to CAN XL - Migrating realtime high performance networks into the future
- FlexRay Limitations and Market Challenges
- VW Group's E^{3}2.0 Initiative
- Challenges and Opportunities in FlexRay to CAN-XL Migration

Marko Moch, Senior System Development Engineer, Architecture Technologies, CARIAD SE, Germany

18:00   End of conference Day One

Get-together
At the end of the first conference day we kindly invite you to use the relaxed and informal atmosphere for in-depth conversations with other participants and speakers.

09:25   Chair's welcome

III. Simulation & Tools

09:30   Testing Interoperability in 10BASE-T1S networks
- Key task in the automotive industry to identify connectivity issues between Phys
- New challenges regarding 10BASE-T1S networks with PLCA
- Comparison to 100(0)BASE-T1 IOP tests and lessons learned

Leila Jürgensen, Technical Head of Automotive Ethernet, in-tech GmbH, Germany

10:00   Recent Trends in Physical Layer (PHY) Communication Channels for High-Speed In-Vehicle Networks
- Overview of Automotive Communication Channels (UTP / STP / Coax) and Protocols
- Influence of Connectors on the Communication Channel
- Functional Safety With Regard to High Speed Communication Channels

Stephan Kunz & Florian Graßl, Research & Development, Rosenberger Hochfrequenztechnik GmbH & Co. KG, Germany

10:30   Simulation-Based Optimization and Test of Communication Concepts in Automotive Vehicles
- Optimization of communication systems and concepts through simulation
- Virtual consideration of interactions between communication systems and power supply systems
- Contribution to the evolution of automotive vehicles

Dr. Michael Kiffmeier, Product Owner / SW Engineer, Wiring Architecture, LV-Energy & Simulation, CARIAD SE, Germany

11:00   ☕   Networking & coffee break

11:45   SDV-latencies: Event-chains for a guaranteed customer experience
- Function deployment as it is done today in SDV´s is a blind flight
- Accurately capturing the actual dynamic architecture clears the fog
- Use event-chains to front-load your development process from design to DevOps
- How What if-Analysis predicts the impact of design changes on customer experience

Florian Mayer, Professional Services Project Lead, INCHRON AG, & **Mario Maul**, Expert Architecture & Networks, EDAG Engineering GmbH, both: Germany

12:15   Verification of Automotive Networks through IBIS-AMI
- System architecture exploration of SerDes
- Mitigate RF channel loss, discontinuities, crosstalk, and EMI at high-speeds
- Verify and estimate performance through simulation
- Deploying IBIS-AMI based workflow to ASA

Ganesh Raj Rathinavel, Application Engineer, MathWorks, The Netherlands, Co-Authors: William Warner, DSP Systems Architect & Hiok-Tiaq Ng, VP - Analog Engineering, both: Aviva Link, USA

12:45   🍴   Lunch

IV. Communication technologies & Connectivity 2

13:45   Standardized high-speed SerDes links as enabler of SDV in future sensor applications
- Need for standardized high-speed connection in SDV
- Importance of integrated sensor and communication technologies
- ASA-ML 2.0 (Automotive SerDes Alliance Motion Link): Powering Future Sensor Networks for SDV
- ASA-ML 2.0 combines SerDes benefits with Ethernet IP protocol's universal flexibility

Christian Liebl, System Architect In-Vehicle Networks, Continental Automotive Technologies, Germany

14:15   MACsec and beyond – the upcoming Network Security State of the Art.
- MACsec is considered a game changer in protecting high-speed Ethernet communication
- MACsec does not solve all problems and needs to be combined with additional security solutions
- Introduction to MACsec for beginners and insights for network security experts
- Our prediction for the future security state of the art

Dr. Lars Völker, Technical Fellow, Technica Engineering GmbH, Germany

14:45   Security for the third Generation of the CAN Bus - Performance Metrics
- Overview about the standards
- Proof of concept for the encryption and authentication of CAN XL frames using the Fraunhofer IPMS CAN-SEC Controller IP core
- Discussion of resulting performance metrics

Dr. Andreas Heinig, Research Associate - IP Core Design, Fraunhofer IPMS, Germany

15:15   Achieving Ubiquitous Connecvity for Future Vehicles
- Optimizing 5G Connectivity
- Addressing Capacity Challenges with 5G mmWAVE
- Closing Coverage Gaps with NTN and TN Integration
- Transformation through vDAS in Vehicle Connectivity

Dietmar Schnepp, Product Director, Molex CVS Bochum GmbH, Germany

15:45   Closing Remarks

16:00   End of conference

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Registration

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Automotive Data Communication

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